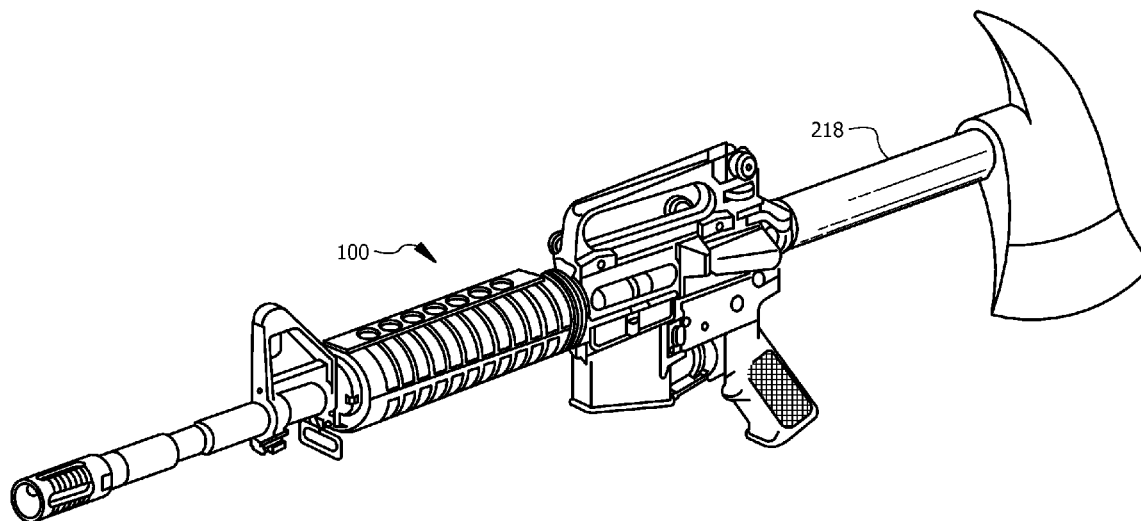


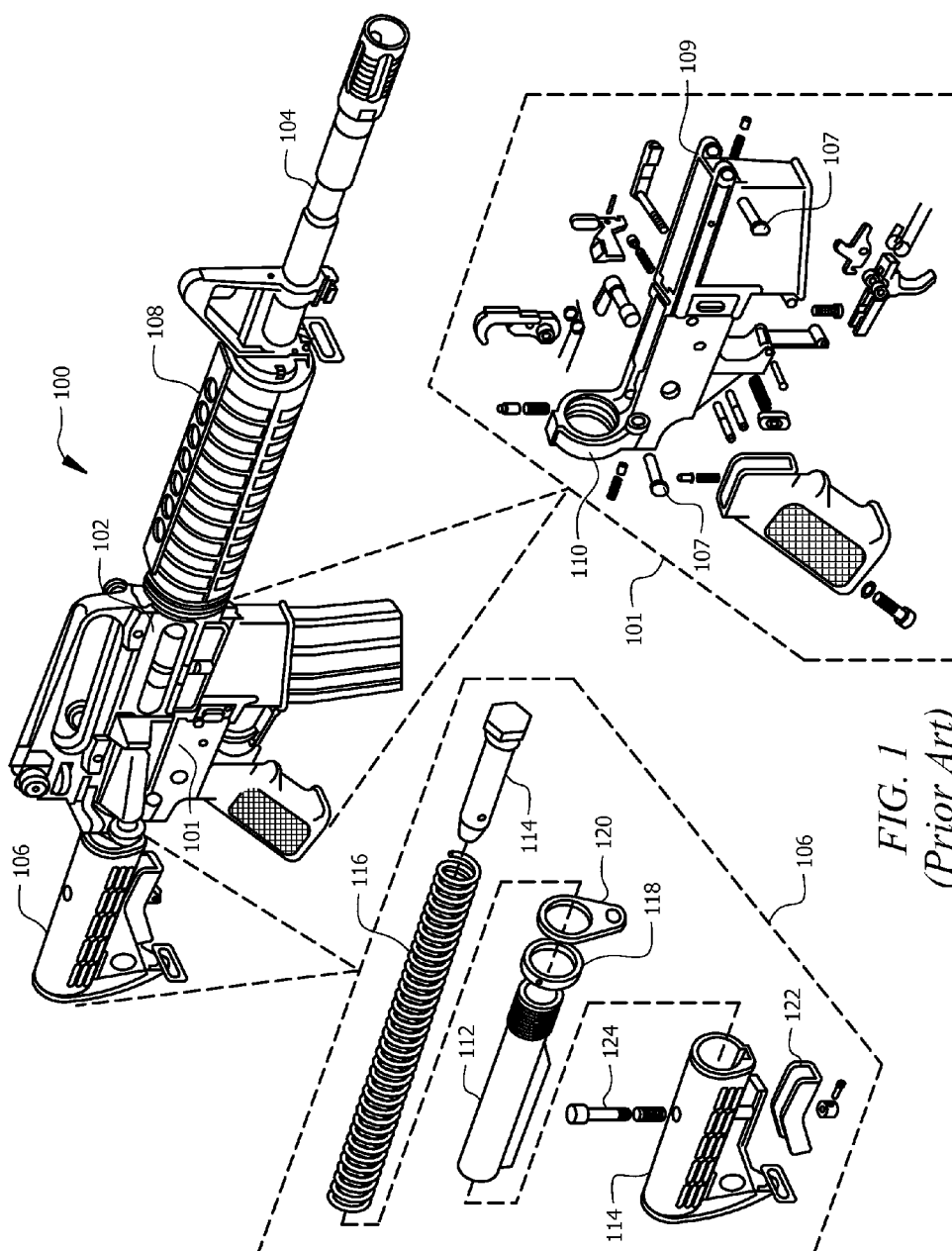


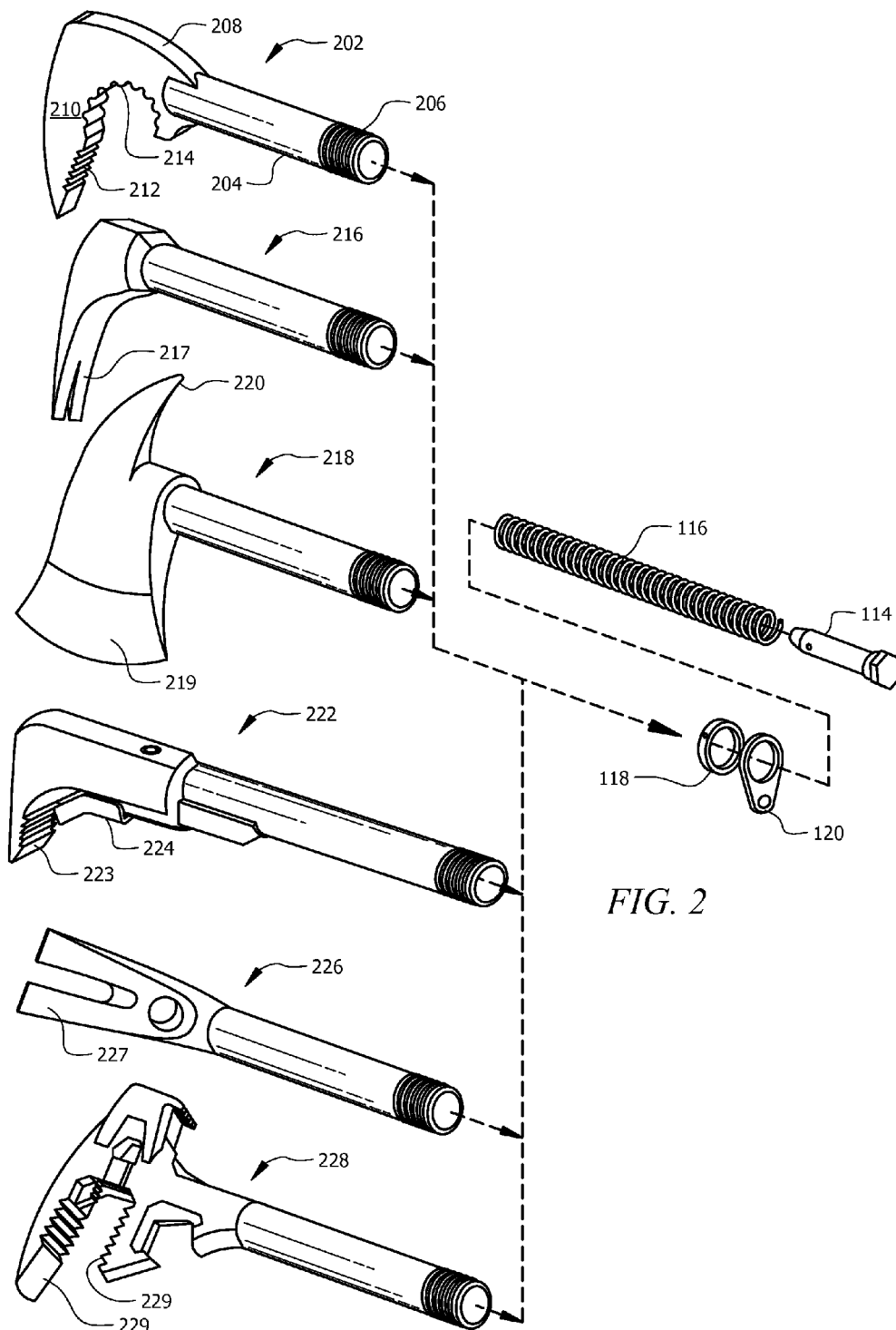
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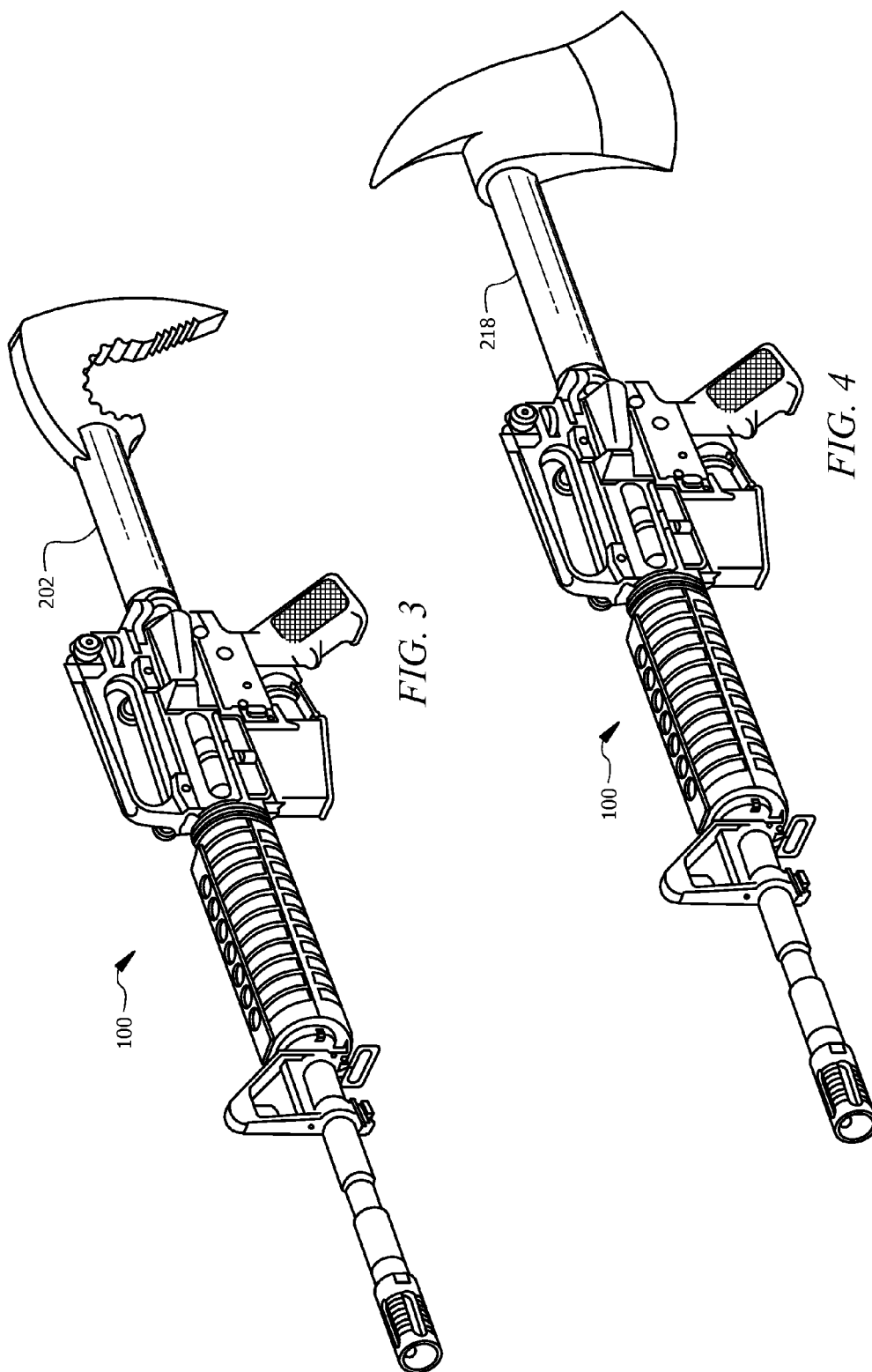
(19) **United States**(12) **Patent Application Publication**
Copeland et al.(10) **Pub. No.: US 2016/0153742 A1**(43) **Pub. Date: Jun. 2, 2016**(54) **FIREARM-MOUNTED RESCUE TOOL**(71) Applicants: **Tracey Copeland**, Garland, TX (US);
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Andrew BeGole, Pleasant Ridge, MI (US)(21) Appl. No.: **14/556,620**(22) Filed: **Dec. 1, 2014****Publication Classification**(51) **Int. Cl.**
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F41C 27/16 (2006.01)(52) **U.S. Cl.**CPC **F41C 23/00** (2013.01); **F41C 27/16** (2013.01)(57) **ABSTRACT**

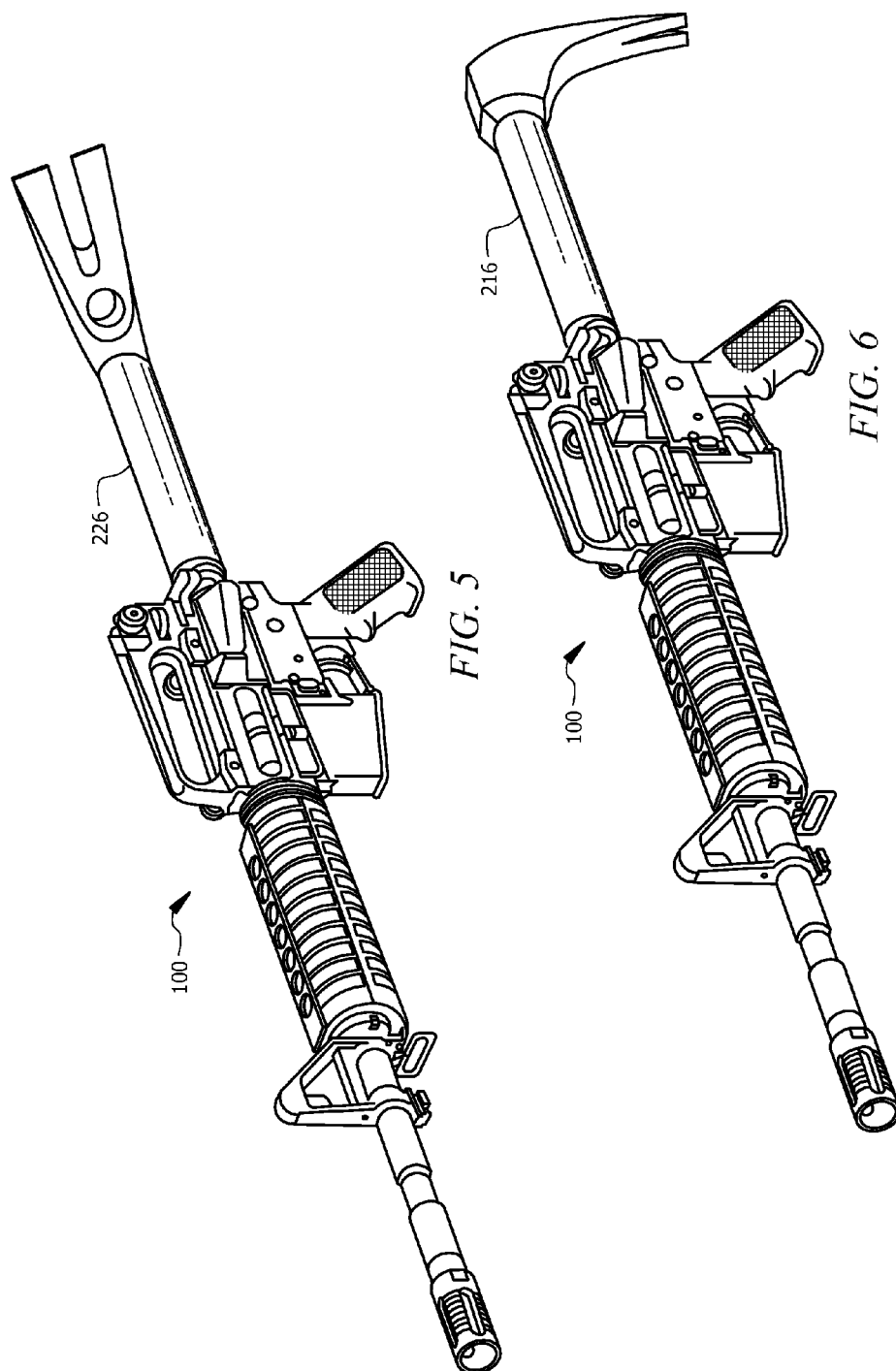
A rescue tool for removably mounting onto a firearm. The rescue tool includes a shaft having one end formed for mounting onto a firearm. An insertion body is formed on a second end of said shaft of the tool. The insertion body is ideally formed in a shape that will aid emergency first-responders, law enforcement personnel and/or military personnel in entering buildings through entryways such as, for example, secured doors and windows. The insertion body of the rescue tool may be integrally formed onto the end of the tool or alternatively removably mounted onto the rescue tool. A user-actuated mechanism may be utilized to provide the user with the ability to adjust the length of the rescue tool, thus providing for ease in carrying the tool while simultaneously providing a longer lever arm when needed for added leverage in breaching buildings.

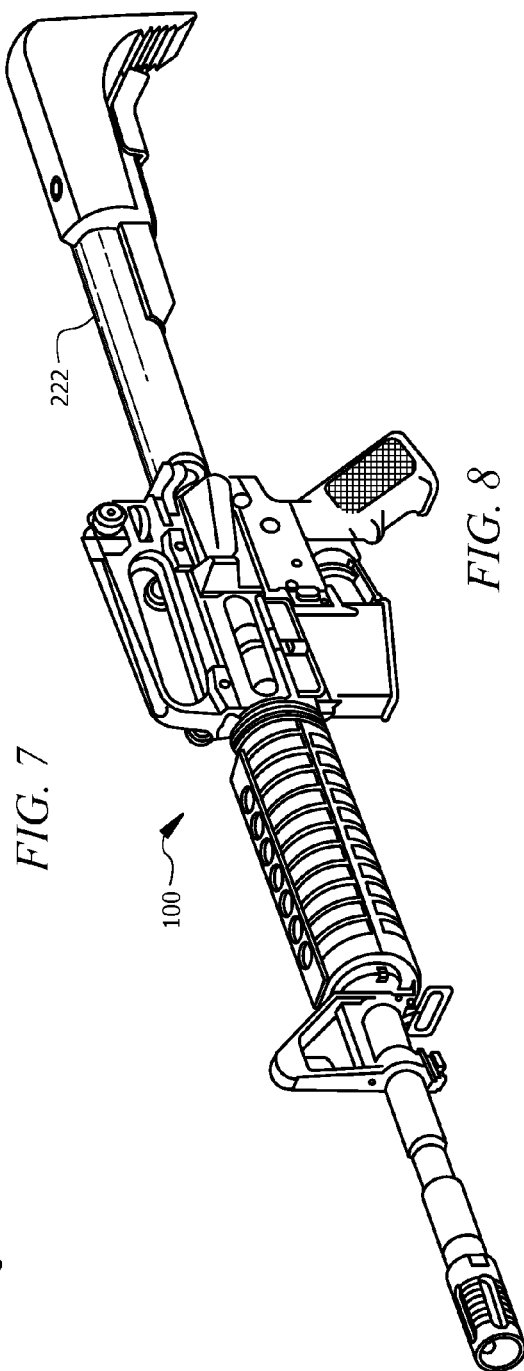
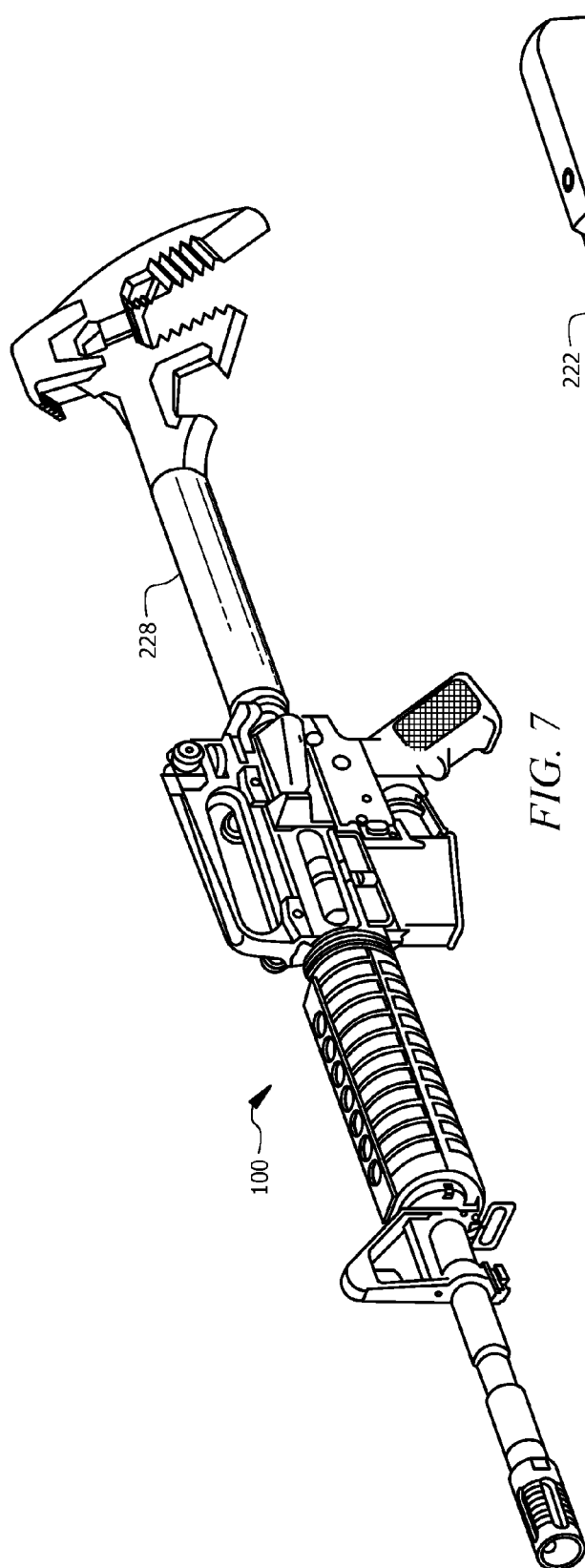


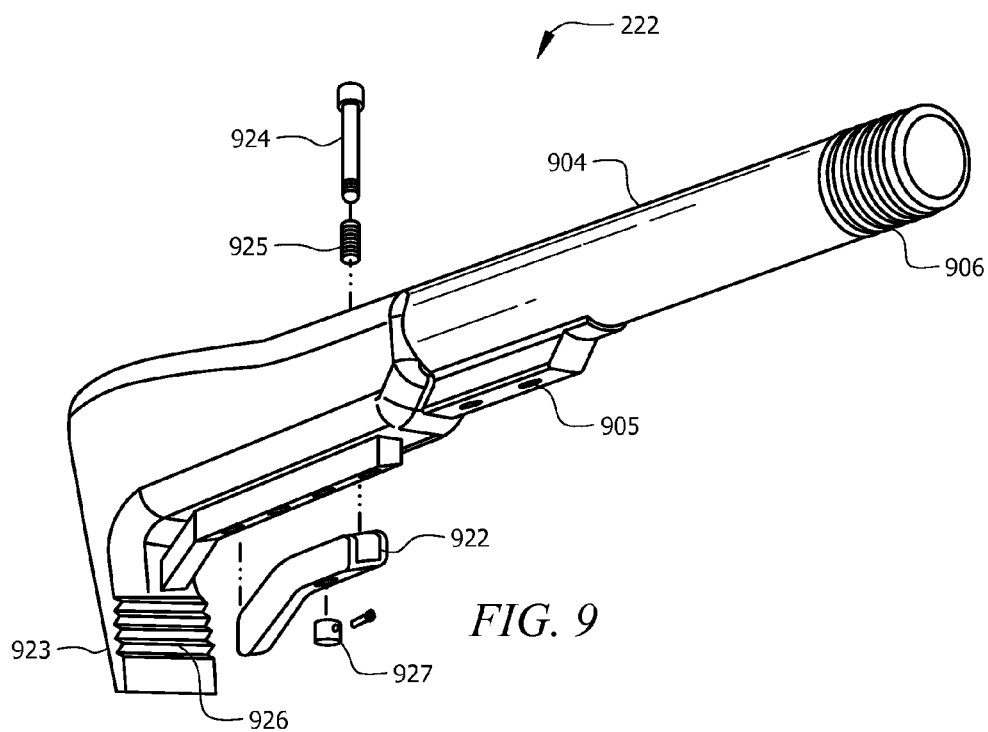












FIREARM-MOUNTED RESCUE TOOL

BACKGROUND OF THE INVENTION

[0001] 1. Technical Field

[0002] The present invention relates generally to firearms and more particularly, to a rescue tool that may be removably mounted onto a firearm.

[0003] 2. Description of Related Art

[0004] A wide variety of tools are commonly used by law enforcement personnel, firefighters, emergency medical personnel and military personnel to gain access to structures having secured entryways (for example, a locked door) that prevent easy entry. Such rescue/entry/breaching tools typically include one or more implements having structures intended for use in prying, cutting, puncturing and/or striking. For example, a "Halligan" bar is a well-known multi-purpose tool that can be utilized to gain entry through a locked door or other entry obstruction. A Halligan bar typically consists of an elongated shaft having a claw or fork on one end of the shaft, and a wedge and pick on the other end of the shaft. Either the fork or the wedge of a Halligan bar may be used to open a locked door by forcing them between the door and the doorframe, and prying the two structures apart. Other rescue/entry/breaching tools may include such features as forked prongs, blades, pikes, multi-pronged pry-bars and other wedge-shaped implements.

[0005] Military personnel and law enforcement personnel such as those deployed in S.W.A.T. teams, are often required to carry heavy loads during operations. Such loads may include communications equipment, body armor, extra magazines and ammunition, firearms and other weapons, medical supplies, optics, lighting equipment, food and water, and entry/breaching tools. As the weight of loads carried by law enforcement and military personnel increases, tactical effectiveness tends to correspondingly decrease. Thus, there are many advantages in taking steps to effectively reduce the overall weight of such loads. Accordingly, there is strong-felt need in the prior art to reduce the overall loads carried by law enforcement personal and military personnel required to carry both a firearm and one or more rescue/entry/breaching tools. At least one object of the invention disclosed herein is to meet such need.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0006] The novel features believed characteristic of the inventions are set forth in the appended claims. The inventions themselves, however, as well as preferred modes of use, further advantages thereof, will be best understood by reference to the following detailed description of illustrative embodiments when read in conjunction with the accompanying drawings, wherein:

[0007] FIG. 1 is a perspective view of an assembled AR-15 type firearm found in the prior art, and exploded views of an AR-15 type firearm lower receiver assembly and buttstock assembly found in the prior art;

[0008] FIG. 2 is a perspective view of multiple embodiments of the firearm-mounted rescue tool of the present invention, and further showing the manner in which such embodiments of the tool may receive and/or be removably connected to prior art AR-15 type firearms components;

[0009] FIG. 3 is a perspective view of an alternate embodiment of the firearm-mounted rescue tool of the present inven-

tion removably connected to a lower receiver of an AR-15 type firearm, said embodiment of the tool having an armorer's tool formed into the body of said tool;

[0010] FIG. 4 is a perspective view of an alternate embodiment of the firearm-mounted rescue tool of the present invention removably connected to a lower receiver of an AR-15 type firearm, said embodiment of the tool having a blade and pick formed into the body of said tool;

[0011] FIG. 5 is a perspective view of an alternate embodiment of the firearm-mounted rescue tool of the present invention removably connected to a lower receiver of an AR-15 type firearm, said embodiment of the tool having wedged fork formed into the body of said tool;

[0012] FIG. 6 is a further perspective view of the alternate embodiment of the firearm-mounted rescue tool as shown in FIG. 5;

[0013] FIG. 7 is a perspective view of an alternate embodiment of the firearm-mounted rescue tool of the present invention removably connected to a lower receiver of an AR-15 type firearm, said embodiment of the tool having a two pronged prying element formed into the body of said tool;

[0014] FIG. 8 is a perspective view of an alternate embodiment of the firearm-mounted rescue tool of the present invention removably connected to a lower receiver of an AR-15 type firearm, said tool configured to allow a user to adjust the length of said tool; and

[0015] FIG. 9 is an exploded view of the alternate embodiment of the firearm-mounted rescue tool of the present invention as shown in FIG. 8.

[0016] Where used in the various figures of the drawings, the same reference numerals designate the same or similar parts. All figures are drawn for ease of explanation of the basic teachings of the invention only; the extensions of the figures with respect to number, position, relationship, and dimensions of the parts to form the preferred embodiment will either be explained or will be within the skill of persons of ordinary skill in the art after the following teachings of the present invention have been read and understood.

DETAILED DESCRIPTION OF THE DRAWINGS

[0017] Several embodiments of Applicant's invention(s) will now be described with reference to the drawings. Unless otherwise noted, like elements will be identified by identical numbers throughout all figures. The invention(s) illustratively disclosed herein suitably may be practiced in the absence of any element that is not specifically disclosed herein.

[0018] Systems and devices for utilizing a firearm-mounted rescue tool are disclosed herein. It should be noted that while the exemplary embodiments of rescue tools and other components discussed herein are taught in association with their application in the context of firearms, the systems and devices taught herein could also be equally utilized in connection with other types of non-firearm mechanical devices that would benefit from the incorporation of the types of implements discussed herein.

[0019] Referring to FIG. 1, a perspective view of an M-16/M4/AR-15 type firearm (100) as known in the prior art. Such firearm typically include, amongst other components, a lower receiver (101), an upper receiver (102), a barrel (104) and a buttstock assembly (106). The upper receiver and lower receiver are removably connected to one another through the use of multiple pins (107) configured to be received by correspondingly sized apertures (109) formed onto the receiver

assemblies. A hand guard (108) may be formed around the barrel to protect a user's hands from heat generated during operation of the firearm.

[0020] Still referring to FIG. 1 and in particular, exploded views of the lower receiver assembly (101) and buttstock assembly (106) of an M-16/M4/AR-15 type firearm. The lower receiver assembly includes a threaded aperture (110) formed on a rearward portion of the receiver, which is sized for receiving (and threaded for securing) a generally cylindrical receiver extension (also known in the art as a "buffer tube") upon which an adjustable buttstock may be mounted. A buffer and buffer spring are sized for insertion into a cavity formed into the hollow receiver extension. A "castle nut" and receiver end plate aid in securing and aligning the receiver extension to/with the lower receiver. An adjustable buttstock (114) may be removably mounted onto the receiver extension (112), the length of said buttstock being adjustable by a user through use of a lever (122) attached to a spring-mounted bolt (124) configured to pass through holes formed into the receiver extension and buttstock.

[0021] Referring now to FIG. 2, perspective views of multiple embodiments of the firearm-mounted rescue tool. With particular reference to one illustrative embodiment of the rescue tool (202), the tool includes a hollow shaft (204) having a generally cylindrical shape. One end of the shaft has threads (206) formed on an outer surface for engaging a threaded aperture (110) found on a rearward end of a lower receiver (101). An insertion body (208) is formed on a second more rearward end of the tool. The insertion body (208) may be integrally formed to the shaft (204) or in alternate embodiments as discussed below, may be removably attached and user-adjustable to provide for various lengths of the tool as desired by a user.

[0022] As shown in FIG. 2, alternate embodiments of the rescue tool may include insertion bodies having various types of shapes and configured to perform various types of functions, while all falling within the scope of the present invention. With specific reference to the embodiment shown at 202, the insertion body (208) is formed to include a prying implement extending downward from the body (and shaft) in a generally perpendicular direction with respect to said body and shaft. The prying implement (210) is generally wedge shaped for insertion into, among other structures, the space between a door and a doorframe. Teeth (212) are formed on a surface of the prying implement, allowing for increased engagement with the surfaces upon which it is used (doors, windows, etc.).

[0023] It is contemplated that the insertion body may also include other surfaces having shapes and textures that may or may not be useful for the aiding in the entry of buildings, but which may have other advantageous uses. For example, an armorer's tool (214) is formed on the underside of the insertion body in one embodiment of the tool (202). The armorer's tool is semi-circular in shape and includes wedged notches for use in assembling and disassembling the barrel of an AR-15 type firearm. It is contemplated that the insertion body may be sized and shaped to include other types of structures that may aid rescue personnel, law enforcement personnel and military personnel in the performance of their respective duties and in repairing or maintaining their weapons.

[0024] A further alternate embodiment of the rescue tool (216) includes an insertion body having a prying implement (217) formed to include forked prongs. The forked prongs (217) are useful not only in prying open various structures,

but also in removing nails, screws and other fasteners that may be wedged between the prongs and pried loose. Other embodiments of the rescue tool (226) may include prying implements having prongs of various dimensions, depending upon the function for which they are intended. An even further alternate embodiment of the rescue tool (218) includes an insertion body having a prying implement (219) formed to include an axe like blade and pike (220). Both the blade and the pike may be utilized to break or otherwise puncture structural surfaces of entryways. An even further alternate embodiment of the rescue tool (228) may include an insertion body having a plurality of prying implements (229), each prying implement extending downward in a generally perpendicular orientation with respect to the insertion body and shaft. Ridges formed on the prying implements may be included to provide for increased grip on structural surfaces. It should be noted that while the embodiments discussed herein feature prying implements extending from the insertion body and shaft in a generally downward direction, it is contemplated that other alternate embodiments of the rescue tool may include prying implements or gripping implements having other orientations with respect to the insertion body and shaft, and may extend at various angles from the insertion body and shaft other than perpendicular, depending on the particular function of the implement.

[0025] An even further embodiment of the rescue tool (222) includes an insertion body that, as discussed in more detail below with reference to FIG. 9, is removably attached to the shaft of the tool and is configured for user-adjustment (adjustment of length). A wedge-shaped prying implement extends downward from the insertion body and shaft in a generally perpendicular direction. The prying implement terminates at a sharpened point, allowing for insertion into tight spaces. Ridges or "teeth" are formed onto a forward surface of the prying implement, allowing for a better grip on structural surfaces. As discussed in further detail below, a user-actuated lever (224) is connected to the insertion body, allowing the user to adjust the length of the rescue tool. Using the lever, a user may move a spring-loaded bolt disposed within a hole in the insertion body, into one or more holes formed into the shaft.

[0026] A collapsible, user-adjustable rescue tool provides rescue, emergency medical, law enforcement and military personnel an advantage not seen in prior art rescue, breaching and entry tools. Namely, the tool may be carried in a shortened mode when in transit or otherwise not in use, but may be lengthened at the user's discretion if needed when entering a building. Allowing the user to lengthen the rescue tool provides the user with a longer lever arm, which in turn provides for increased prying effectiveness (due to increased torque). Law enforcement and military personnel may also adjust the length of the rescue tool for the purpose of using the tool as a defensive or offensive weapon if circumstances of use so warrant. Another advantage of the rescue tool being configured for removable mounting is that the tool may be interchangeably used with a firearm buttstock. More specifically, a user may mount either a buttstock or a rescue tool on his or her pistol, depending on the circumstance facing the user at that particular moment.

[0027] Referring now to FIGS. 3, 4, 5, 6, 7 and 8, perspective views of the alternate embodiments of the rescue tool as shown in FIG. 2, said rescue tools being removably mounted to the rearward end of an AR-15 type pistol (100). The rescue tool having an outer shaft end that is threaded, is configured

for mounting onto the correspondingly threaded aperture formed on the rearward end of a lower receiver of an AR-15 type pistol. A standard castle nut and receiver end plate may be used to secure and align the rescue tool to/with the lower receiver. Although not an essential feature of the present invention taught herein, it should be noted that the embodiments of the rescue tool include an insertion body having at least one outer surface having a substantially flat portion, preferably rearward facing, that is free from sharpened edges or points. The rearward facing substantially flat portion of the rescue tool may be used as a pounding implement. Additionally, the rearward facing substantially flat portion of the insertion body may be used to stabilize the pistol when aiming and/or firing said pistol.

[0028] It should be noted that the rescue tool may be constructed out of any number of materials. Non-limiting examples of the types of materials that may be utilized to construct the rescue tool include steel and other metals and metal alloys, and polymers. Those of skill in the art will appreciate that a number of factors should ideally be considered when choosing the type(s) of materials used to construct the rescue tool. Such considerations may include various material properties such as weight, specific modulus, strength, elasticity, hardness, melting point and electrical conductivity. In various embodiments of the rescue tool, the shaft of the tool may be constructed of a different material than the material(s) chosen to construct the insertion body. If formed separately during construction of the rescue tool, the insertion body that is to be integrally attached to the shaft of said tool, may be welded or otherwise permanently or semi-permanently connected to the shaft. With respect to the embodiment (222) shown in FIG. 8, the insertion body is removably connected to the distal end of the shaft of the tool as discussed further below.

[0029] Referring now to FIG. 9, an exploded view of the alternate embodiment (222) of the firearm-mounted rescue tool of the present invention as shown in FIG. 8. The rescue tool (222) includes a substantially cylindrical shaft (904) having one end with threaded grooves (906) formed thereon for engaging a correspondingly threaded aperture formed on a firearm lower receiver. It should be noted that while the embodiments of the rescue tool taught herein include rescue tools having substantially cylindrical shafts, it is contemplated that alternate embodiments of rescue tools may have shafts or other support structures, having various other types of shapes which may or may not be cylindrical or hollow, depending on whether it is necessary to accommodate a buffer, spring or any other type of firearm component, and further depending on the type of firearm to which it will be mounted. Likewise, although embodiments of the rescue tool discussed herein include a threaded end for mounting onto an AR-15 type pistol, alternate embodiments of the rescue tool may connect, attach to, mount to, or otherwise fasten to a portion of a firearm or other device by any known or heretofore unknown means.

[0030] Still referring to FIG. 9, extending downward from the insertion body in a generally perpendicular orientation, the prying element (923) is generally wedge shaped and terminates at a substantially sharpened point useful for insertion into tight spaces such as doors and windows. Grooves (926) formed on a forward facing surface of the prying implement aid in the tool's effectiveness in prying. The insertion tool includes a spring-loaded, lever-actuated mechanism that permits a user to adjust the length of the rescue tool, effectively

providing for a telescoping/collapsing rescue tool. Formed on the underside of the insertion tool is a protrusion upon which a lever is mounted via a bolt (924) and nut/pin (927). A spring (925) is used to bias the bolt (924), which passes through holes formed in the insertion tool and shaft of the tool, said holes formed in predetermined positions, allowing for the insertion body to be locked at certain lengths along the rescue tool shaft at the discretion of the user. It is contemplated that other mechanisms for permitting adjustment of the rescue tool length to be implemented in alternate embodiments of the rescue tool. By way of example, other alternate embodiments of the rescue tool may utilize an adjustable clamp formed around the insertion body, allowing a user to tighten or loosen the clamp, thereby increasing or decreasing the ease by which the insertion body may slide along the shaft of the rescue tool.

[0031] It should be noted that the description of the present invention has been presented for purposes of illustration and description, and is not intended to be exhaustive or limited to the invention in the form disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art. The preferred embodiment appearing in the drawings was chosen and described in order to best explain the principles of the invention, the practical application, and to enable others of ordinary skill in the art to understand the invention for various embodiments with various modifications as are suited to the particular use contemplated. It will be understood by one of ordinary skill in the art that numerous variations will be possible to the disclosed embodiments without going outside the scope of the invention as disclosed in the claims. Moreover, it should be noted that uses of the phrase "the present invention" within this disclosure are not intended to limit or otherwise restrict the scope of the invention(s) disclosed and claimed by the inventor, but said phrase is merely intended to refer to certain examples of embodiments of the invention(s).

What is claimed is:

1. A tool for mounting onto a firearm, said tool comprising:
 - (a) a shaft having a first end and a second end; said first end formed for mounting onto a firearm; and
 - (b) a first prying implement formed on said second end; wherein said first prying implement extends in a direction that is generally perpendicular from said shaft.
2. The tool for mounting onto a firearm of claim 1, wherein said second end has threads formed thereon for removable mounting onto a firearm having a correspondingly threaded aperture.
3. The tool for mounting onto a firearm of claim 2, wherein said shaft is hollow and substantially cylindrical in shape.
4. The tool for mounting onto a firearm of claim 3, wherein said prying implement is substantially wedge-shaped, said prying element terminating on one end at a point.
5. The tool for mounting onto a firearm of claim 4, wherein said prying implement is formed on an insertion body formed on said second end, said insertion body further including an end of which at least a portion is substantially flat.
6. The tool for mounting onto a firearm of claim 5, wherein at least one surface of said insertion body is semi-circular in shape.
7. The tool for mounting onto a firearm of claim 5, wherein a plurality of grooves are formed on at least one surface of said insertion body.
8. The tool for mounting onto a firearm of claim 1, said prying element having a downwardly facing blade.

9. The tool for mounting onto a firearm of claim **1**, said prying element having two or more forked prongs.

10. The tool for mounting onto a firearm of claim **1**, further comprising a second prying element extending in the same general direction as the first prying element.

11. A tool for mounting onto a firearm, said tool comprising:

(a) a shaft having a first end and a second end; said first end formed for mounting onto a firearm;

(b) an insertion body removably mounted on said second end; and

(c) a prying implement formed on said insertion body; wherein said first prying implement extends in a direction that is generally perpendicular from said shaft.

12. The tool for mounting onto a firearm of claim **11**, wherein said insertion body is removably attached to said shaft via a user-actuated mechanism allowing for the length of said tool to be adjusted by a user.

13. The tool for mounting onto a firearm of claim **12**, wherein a plurality of holes are formed in said shaft to receive a fastener of said user-actuated mechanism.

14. The tool for mounting onto a firearm of claim **13**, wherein said shaft is hollow and substantially cylindrical in shape.

15. The tool for mounting onto a firearm of claim **14**, wherein said shaft is hollow and substantially cylindrical in shape.

16. The tool for mounting onto a firearm of claim **15**, wherein said prying implement is substantially wedge-shaped, said prying element terminating on one end at a point.

17. The tool for mounting onto a firearm of claim **16**, wherein said prying implement is formed on an insertion body formed on said second end, said insertion body further including an end of which at least a portion is substantially flat.

18. The tool for mounting onto a firearm of claim **17**, wherein a plurality of grooves are formed on at least one surface of said insertion body.

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